structed to be suitable for achieving this very low controlled dosage into a high pressure high volume stream of water. Suitable apparatus is available from Prominent Fluids controls Inc of Pitsburgh and includes the ProMinent (trade mark) gamma G/5a associated with appropriate pressure release valve systems and other conventional means for feeding the required low amount of polymer dispersion into the water.

The amount of polymer is usually at least about 0.5 ppm (parts dry weight polymer per million parts by weight water) and usually at least 1 ppm. It is not usually necessary for it to be above about 10 or 20 ppm although in some instances it may be up to 30 or even 50 ppm, depending upon the soil conditions and the duration of irrigation and the duration of polymer application.

Sometimes the polymer is dosed into the irrigation water substantially continuously However an advantage of the invention is that the dosage can, if desired, be conducted intermittently, either in response to manual control or in response to automatic timer control. For instance, in pivot irrigation, the polymer can be dosed continuously but preferably is dosed for, for instance, one or two substantially complete rotations of the spray arms and then discontinued for, for instance, one to ten rotations before it is resumed again.

The inclusion of the proposed low dosage of the polymer in the spray water can have dramatic effects on performance. It not only eliminates capping or other surface sealing effects and increased water infiltration but also reduces run-off and erosion when the sprayed area is on an incline, and reduces loss of spray due to evaporation and drift.

The following is an example of the invention.

A potato field of a highly crustable clay was freshly tilled. In accordance with conventional practices small dams were created in the bottoms of the potato furrows to help prevent run-off of irrigation water. The field was to be irrigated using a pivot irrigator using a 150 acre circle in 18 hours using 850 gallons per minute irrigation water.

When this had been done in previous years, there had been significant crusting and water run-off.

In the invention, an anhydrous dispersion of 50% anionic polyacrylanide in 50% oil (available from Allied Colloids Inc under the trade name Soilfix) was dosed initially at 15 ppm using a low dose diaphragm pump against 60 psi water pressure.

The pump was left to run for 18 hours, i.e. for one entire circle of the pivot. Irrigation was then discontinued and then five days later irrigation was conducted for 18 hours using 5 ppm polymer addition. This was repeated 4 days later. 4 days after that there was 18 hours irrigation without polymer, 6 days later there was 18 hours irrigation with 5 ppm polymer and 5 and 10 days later there was irrigation without polymer.

It was observed that there was far less crusting and water run-off than in previous years, water infiltration was improved and there was increased crop vigour.

I claim:

1. A method of irrigating a crop area of at least 1000 mm^2 by pumping water through feed ducting and a mixing zone to a spray manifold supplying one or more spraying devices by which the water is sprayed onto the crop area and in which a substantially stable dispersion in a liquid of water soluble polymer particles is metered at a predetermined rate of 0.5 to 30 ppm into the water at or before the mixing zone and the polymer particles are substantially dissolved into the water before the water is sprayed from the spraying devices.

2. A method according to claim **1** in which the substantially stable dispersion is a reverse phase emulsion of aqueous particles of polymer dispersed in a non-aqueous liquid.

3. A method according to claim **1** in which the substantially stable dispersion is a reverse phase emulsion of substantially anhydrous particles of polymer dispersed in a non-aqueous liquid.

4. A method according to claim **1** in which the substantially stable dispersion is a dispersion of polymer particles in an aqueous phase containing a concentration-dependent solubilisation inhibitor.

5. A method according to claim **4** in which the solubilisation inhibitor includes an electrolyte which is a fertiliser.

6. A method according to claim **4** in which the solubilisation inhibitor includes ammonium sulphate.

7. A method according to claim **1** in which the polymer is a synthetic polymer having intrinsic viscosity at least 4 dl/g formed from water soluble ethylenically unsaturated monomer or monomer blend.

8. A method according to claim **7** in which the polymer is formed from 100 to 30% by weight acrylamide and 0 to 70% by weight ethylenically unsaturated anionic monomer.

9. A method according to claim **1** in which each spraying device comprises an elongate spray member each of which has a plurality of spray orifices distributed along its length and the spray orifices have a diameter of at least 3 mm.

10. A method according to claim **1** conducted using a spray apparatus comprising a housing, a water inlet to which water feed ducting can be attached, the spray manifold, the mixing zone, and a water supply passage leading from the inlet through the mixing zone to the manifold.

11. A method according to claim **10** in which there is a filter in the passage and the dispersion is metered into the passage on the inlet side of the filter.

12. A method according to claim **1** conducted using a pivot irrigator.

13. A method according to claim **1** in which the crop area is at least 50,000 m^2.

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